



Senegal Household Energy Project

October 1996 — January 2002

The combined demand for wood and charcoal is so strong in Senegal that all but two regions of the country are currently experiencing wood fuel shortages. EnterpriseWorks adapted a fuel-efficient charcoal-cooking stove for household use to help address this issue and to date, nine different stove models and accessories are being sold to Senegalese households. The stove prices range from around \$3.50 to about \$50 and last for two to three years at a minimum, but often for five to six years.

The first EnterpriseWorks energy project began with support from USAID in 1990, promoting fuel-efficient Jambar stoves. A follow-on project lasted until 1998. While the program has already met with considerable success and demonstrated sustainability, selling over 4,000 stoves and accessories in 1999 with very little program support, project staff estimate that the sales potential is more than 20,000 annually. New funding from USAID is sharpening the private-sector focus of the program, reinforcing production capacity, employing mass-marketing techniques to promote stove sales, and creating a distribution network of full-time merchants (a shift from working with non-profit groups). Targets for the project were all met and surpassed.



ACCOMPLISHMENTS

- Customized and commercialized a fuel-efficient charcoal stove for household use in Senegal.
- 42,008 stoves sold (140% of goal).
- Reduced charcoal consumption during cooking by 45 to 50 percent in participating households.
- Trained 61 stove manufacturers (100% of goal).
- Established production capacity in 2 ceramic factories to manufacture ceramic liners (200% of goal).
- Linked stove manufacturers to 238 commercial retailers (397% of goal).
- Gross revenues to stove manufacturers and retailers totaled \$283,196 (126% of the objective).

Economic Participants
25,501 --- in 2001

Enterprises Assisted
279 --- in 2001

Total Monetary Benefits
\$1,757,769 --- in 2001

Cumulative TMB
\$16,730,977

Project Budget
\$1,533,250

Primary Funders
USAID/Senegal

LESSONS LEARNED

The success rate of this project was due in large part to the marketing strategy employed. Senegal has a vibrant commercial community, both formal and informal, and the project used some best practices from both in its distribution and promotional campaigns. A marketing manager was hired from the private sector. His expertise in the development of retail networks, the production and airing of advertisements, and the management of commercial staff led to sales figures that resembled those of commercial products much more than those of products traditionally promoted by donor-funded projects.

Field-testing led to important stove modifications. After field-testing the new, fuel-efficient stove in Dakar, EnterpriseWorks/Senegal made some important design changes in order to adapt the stove to meet the needs of Senegal's larger average household size. For example, in preparing the cement mixture that holds the ceramic liner in place, ash from wood or charcoal left over after cooking was used a substitute for vermiculite, which is not available in Senegal. The diameter of the standard stove model was also widened and its height was increased. Small metal hinges were added to hold the liner in place, and curved handles were added to make the stove portable. During the past 3 years, manufacturers have added to the consumer appeal of the stoves by designing accessories, such as an oven adapted to grilling, baking, and smoking that sits on top of the standard stove.

The economic and health benefits of the EnterpriseWorks stoves are significant. An important effect of stove distribution has been fuller employment and increased incomes for 35 small-scale metal artisans, 24 of whom are currently operating, all profitably and without any subsidization; two medium-scale ceramic enterprises employing 22 workers; and more than 130 sales agents and women's groups. Project surveys have found that, on average, a Dakar household using the fuel-efficient stove for an entire year saves 575 kg of charcoal annually - a dollar savings of about \$80 per year which is more than one month's wages for many local residents. Future savings in other communities, where charcoal use is more extensive, could prove to be even higher. In addition, because the EnterpriseWorks household stove cuts cooking time by 30 percent, it reduces household exposure to smoke, which can contribute to respiratory illness and eye irritation.

The environmental benefits of the EnterpriseWorks household stove are significant. For every 1,000 Jambar stoves in use, 570 tons of charcoal are saved per year, eliminating the need to clear-cut 57-60 hectares of forested land per year of stove life. In addition, 1,718 tons of emissions of carbon dioxide, a major greenhouse gas, are avoided.

Diversification of producers and marketing channels is necessary for a stable supply of stoves. When operating a new and growing industry, it is important to have additional producers ready to fill the gap should one supplier be forced to stop production temporarily. For the local stove industry to thrive in the project area, it would be desirable to have at least three ceramics suppliers. In addition, each stove retailer should have links with several blacksmiths who manufacture the finished product. A diverse supply source is important for preventing stove shortages, and maintaining the confidence of both retailers and consumers.

Dealing directly with the private sector has provided clear benefits. Unlike other stove projects implemented elsewhere by EnterpriseWorks and other organizations that have relied on NGOs to promote their new technology, EnterpriseWorks now deals directly with private sector producers and sales agents in Senegal. When combined with the use of radio and television advertisements to stimulate sales, this private-sector approach has proven to be more efficient and sustainable than the NGO-oriented approach. In addition, a network of merchants and women's groups in the informal private sector has been effective at introducing and marketing the new stoves.